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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/009,539	10/29/2001	Helmut Weiner	P01,0293	3677
26574 7590 03/03/2009 SCHIFF HARDIN, LLP PATENT DEPARTMENT 6600 SEARS TOWER CHICAGO, IL 60606-6473			EXAMINER THOMPSON, JAMES A	
			ART UNIT 2625	PAPER NUMBER
			MAIL DATE 03/03/2009	DELIVERY MODE PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HELMUT WEINER

Appeal 2008-5854
Application 10/009,539
Technology Center 2600

Decided:¹ March 3, 2009

Before MAHSHID D. SAADAT, ROBERT E. NAPPI, and JOHN A.
JEFFERY, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 CFR § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from the Examiner's rejection of claims 39-92. We have jurisdiction under 35 U.S.C. § 6(b). We affirm-in-part.

STATEMENT OF THE CASE

Appellant invented a method, system, and computer product for transmitting image raster data. The technique includes marking regions having image dither cells with gray scale values and transmitting the position and gray scale values of the regions for printing without transmitting the image raster data.² Claim 39 reads as follows:

39. A method for compressing and transmitting image raster data of pages, comprising the steps of:

generating a data stream of image raster data from language elements of a graphics language, said data stream containing gray image areas in a form of dither cells whose gray scale values correspond to model dither cells;

dividing said image raster data of each one of pages into tiles of a two-dimensional grid, each of said tiles include a plurality of said image raster data;

identifying ones of said tiles that contains only dither cells, and marking said tiles that contains only dither cells to produce marked tiles;

identifying position data and gray scale values and corresponding model dither cells for said marked tiles as characterizing data for said marked tiles, and

² See generally Spec. 5:2-14 and 14:13-16:9.

transmitting said image raster data of pages including transmitting said characteristic data of said marked tiles for printing of said image raster data without transmitting image raster data of said marked tiles having gray scale values of a predetermined model dither cell.

The Examiner relies upon the following as evidence in support of the rejection:

Wong	US 4,032,978	Jun. 28, 1977
Endoh	US 4,652,935	Mar. 24, 1987
Hiratsuka	US 4,758,897	Jul. 19, 1988
Brindle	US 5,526,469	Jun. 11, 1996
Knox	US 5,649,073	Jul. 15, 1997
Spaulding	US 5,822,451	Oct. 13, 1998
Züfle	US 5,940,584	Aug. 17, 1999
Clouthier	US 5,949,964	Sep. 7, 1999
Venkateswar	EP 0 774 858 A2	May 21, 1997

Appellant's Admitted Prior Art ("AAPA") on page 2 of the present application.

(1) Claims 39-46, 51, 53-56, 58-61, 70, 72, 75-77, 79-83, and 85-88 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, and Knox (Ans. 3-15).

(2) Claims 47, 48, and 50 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, and Hiratsuka (Ans. 16 and 17).

(3) Claim 49 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, Hiratsuka, and Wong (Ans. 17 and 18).

(4) Claims 52, 57, 62, 71, and 78 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, and Venkateswar (Ans. 18 and 19).

(5) Claims 63, 65, and 69 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, and Endoh (Ans. 19 and 20).

(6) Claims 64 and 66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, Endoh, and Brindle (Ans. 20 and 21).

(7) Claims 67 and 68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, and Züfle (Ans. 21).

(8) Claims 73 and 74 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, Venkateswar, and AAPA (Ans. 22).

(9) Claim 84 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier, Spaulding, Knox, and Official Notice (Ans. 22 and 23).

(10) Claims 89-92 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Clouthier and Spaulding (Ans. 24-26).

Rather than repeat the arguments of Appellant or the Examiner, we refer to the Brief and the Answer³ for their respective details. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make

³ Throughout this opinion, we refer to (1) the Appeal Brief filed December 12, 2007 and (2) the Examiner's Answer mailed March 11, 2008.

in the Brief have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

OBVIOUSNESS REJECTION OVER CLOUTHIER, SPAULDING, AND KNOX

Claims 39-46, 51, 53-56, 58-61, 70, and 72

Regarding independent claim 39, the Examiner finds that the combination of Clouthier, Spaulding, and Knox teaches its limitations (Ans. 3-5). Appellant argues: (1) Clouthier does not disclose or teach the step of dividing the image raster data into tiles of a two dimensional grid; (2) Clouthier does not disclose or teach the step of identifying tiles that contain only dither cells; (3) Knox fails to teach the step of transmitting characteristic data without transmitting the image raster data; and (4) it would not have been obvious to combine Knox's techniques with the halftone process taught by Clouthier and Spaulding (Br. 16-20).

ISSUES

(1) Has Appellant shown the Examiner erred in finding Clouthier teaches the step of dividing image raster data into tiles and identifying the tiles that contain only dither cells in rejecting claim 39 under § 103?

(2) Has Appellant shown the Examiner erred in finding the combination of Clouthier, Spaulding, and Knox teaches transmitting the pages of image raster data by sending characteristic data of the marked tiles for printing without transmitting image raster data in rejecting claim 39 under § 103?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

Specification

1. The Specification describes a dither cell as a cell that contains a plurality of picture elements or pixels (Spec. 2:31-3:1 and 4:10).

Clouthier

2. Clouthier describes a halftoning method for conveying gray scale information to a printer, including the steps of compressing (module 18) and transmitting raster data (modules 24 and 26) so as to produce less visible halftone patterns (Clouthier, col. 1, ll. 12-13, col. 2, ll. 37-54, col. 3, ll. 28-35, and col. 4, ll. 41-55; Fig. 1).
3. Clouthier explains that module 14 receives the input data stream and examines the printer control language, such as PCL or Post-Script (Clouthier, col. 3, ll. 46-54; Fig. 1).
4. Clouthier discusses module 14 assigns each data segment a halftone type identifier. These identifiers include "11" for text, "01" for graphics, "10" for raster image, and "00" for no halftone operation (Clouthier, col. 3, l. 64 – col. 4, l. 8; Fig. 1).
5. During module 16, Clouthier discloses a page of data is divided into strips and the data segments are converted into two dimensional arrays of pixels. Each pixel in an array is assigned a halftone type identifier associated with its data segment and creates a halftone plane corresponding to the pixel positions in the associated color plane (Clouthier, col. 4, ll. 13-40).

6. At module 26, Clouthier applies a halftone action to each pixel's color value based on its halftone type identifier (Clouthier, col. 5, ll. 1-15). More specifically, Clouthier quantizes each pixel color value into a baseline bucket value and compares the output of three threshold matrices (40, 42, and 44) with the value to arrive at a final bucket value (Clouthier, col. 6, ll. 13-49 and col. 7, ll. 12-34; Fig. 2a).
7. The bucket values are derived from one of three quantization tables and are quantized pixel color values (Clouthier, col. 6, ll. 13-49 and col. 7, ll. 35-59; Fig. 2a).
8. After which, the pixel's intensity level of various pixels within a superpixel or array are adjusted using a dithering procedure. The appropriate pixel within a superpixel can be identified based on the position (i.e., current x and y position) of a pixel on a page and the final bucket value (Clouthier, 6, l. 50 - col. 7, l. 8 and col. 7, l. 60 - col. 8, l. 35; Fig. 2b).
9. Clouthier explains that selected pixels from the superpixels are outputted and sent to the print engine 28 (Clouthier, col. 6, ll. 13-20 and col. 8, ll. 30-35).
10. Clouthier discloses the above explained steps are controlled by firmware contained in the read-only memory of printer 12 (Clouthier, col. 3, ll. 20-23).

Spaulding

11. Spaulding provides a technique for using dither look up tables (LUTs) to compare a pixel's input color to model values (Spaulding, col. 14, ll. 17-56; Fig. 11).
12. Spaulding's technique requires fewer computations and is more flexible than other techniques (Spaulding, col. 14, ll. 48-56).

Knox

13. Knox teaches calibrating the halftone dot structure for a printer. This involves calculating parameters (i.e., "pixels," "horizontal sides," "vertical sides," "corners," "fillets," and "bridges") to model the absorptance of a given bitmap pattern and to calibrate the printer (Knox, col. 4, l. 43 – col. 5, l. 26).
14. The printer's expected tonal reproduction curve (TRC) for a halftone dot can be modeled more simply by knowing the dot pattern and the model parameters used during calibration (Knox, col. 7, l. 51 – col. 8, l. 48; Figs. 6a-b).

PRINCIPLES OF LAW

Discussing the question of obviousness of a patent that claims a combination of known elements, *KSR Int'l v. Teleflex, Inc.*, 550 U.S. 398, 127 S. Ct. 1727 (2007), explains:

if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraida [v. AG Pro, Inc.]*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock[, Inc. v. Pavement Salvage Co.]*,

396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 127 S. Ct. at 1740.

“Any judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant’s disclosure, such a reconstruction is proper.” *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971).

ANALYSIS

Clouthier discloses a method for compressing and transmitting pages of image raster data generated from language elements of a graphics language (FF 2-3). The data stream contains data segments converted into an array of pixels (FF 5), each pixel having a corresponding halftone identifier that creates a plane corresponding to a pixel position in an associated color plane (FF 4-5). Because a dither cell is a plurality of pixels (FF 1), these arrays of pixels associated with a color plane are also dither cells having gray scale values (FF 5). Regarding the limitation of “dither cells whose gray scale values correspond to model dither cells” in claim 39, each pixel in these data segments or dither cells is compared with the output of three threshold matrices or pixelated arrays (FF 6) or model dither cells, and, based on this comparison, the final bucket or gray scale value is derived from quantization tables (FF 6-7). Therefore, Clouthier does disclose dither cells having gray scale values that correspond to model dither cells.

Clouthier also takes the raster data on each page and divides the stream into strips or tiles of a two-dimensional grid (FF 5), each tile including a plurality of data segments or the image raster data. (*Id.*) Thus, Clouthier discloses identifying the data segments or tiles (FF 7-8). Because each data segment contains a plurality of pixels (FF 1), Clouthier also identifies tiles that contain only dither cells (FF 7-8). These tiles are marked with halftone type identifiers (FF 5) for each pixel within the array of pixels. Additionally, Clouthier identifies the appropriate pixel within a superpixel by identifying, among other things, the position of a pixel (i.e., x, y position) and gray scale value (i.e., final bucket value) (FF 8-9). Thus, Clouthier teaches identifying characteristic data (i.e., position and gray scale values) for the marked tiles in order to detect the appropriate pixels to output to the printer. (*Id.*)

While Clouthier explains that the position and gray scale values assist in selecting the output to the printer (FF 8), Clouthier states selected pixels are outputted and sent to the print engine 28 (FF 9). Therefore, as the Examiner acknowledges (Ans. 4), Clouthier does not expressly disclose the step of transmitting characteristic data of the marked tiles for printing the image raster data without transmitting image raster data of the marked tiles. Spaulding does not cure this deficiency (FF 12). The Examiner asserts that an ordinarily skilled artisan would have applied Knox's image correcting technique of only sending model parameters to Clouthier's halftoning method in order to improve Clouthier's method speed and efficiency (Ans. 4-5).

Clouthier, Spaulding, and Knox all discuss halftoning processes. Knox does not discuss transmitting image raster data for printing without

transmitting image raster data. Rather, Knox's invention focuses on calibrating the halftone dot structure for a printer and predicting the printer's response to any halftone dot with knowledge of only model parameters and the halftone dot structure (FF 13-14). These parameters are not position or gray scale values (FF 13). Moreover, while Clouthier discusses transmitting a pixel's position and a gray scale or bucket value prior to printing (FF 6-9), Knox fails to provide a teaching or suggestion to transmit Clouthier's characteristic data (position and gray scale data) for printing without transmitting the image raster data. Rather, combining Knox's teaching with Clouthier's method would result in including a technique for calibrating halftone dots for a printer and predicting the printer's response of the halftone dots. (*Id.*) Thus, we are also not convinced that an ordinarily skilled artisan would have recognized Knox's teaching to calibrate a halftone dot and predict the printer's response to any halftone dot by knowing only model parameters (FF 13-14) suggests a predictable result of transmitting characteristic data, such as position and gray scale values, for printing without transmitting the image raster data as required in claim 39.

The Examiner finds that one skilled in the art would have been motivated by Knox to modify the combined Clouthier and Spaulding process so as to improve its speed and efficiency by only transmitting characteristic data for printing (Ans. 5). Knox does discuss simplifying the calibration process (FF 14), but does not teach or suggest its technique will in any way improve the speed and efficiency of transmitting pages of image raster data for printing. In fact, based on the record before us, we cannot find a reason to combine Knox with Clouthier and Spaulding to teach the step of transmitting the image raster data of pages by sending characteristic data for

printing without transmitting the image raster data without the benefit of Appellant's disclosure. Thus, while *McLaughlin*, 443 F.2d at 1392, indicates that any conclusion of obviousness involves some hindsight reasoning, we find an ordinarily skilled artisan would not have not have recognized Knox's teaching to send model parameters and a halftone dot during calibration and predicting halftone dot patterns as a suggestion to modify the combined Clouthier/Spaulding process so that only characteristic data (position and gray scale) are transmitted for printing. We find, therefore, that the Examiner has improperly relied on hindsight.

For the foregoing reasons, Appellant has shown error in the Examiner's obviousness rejection of independent claim 39 and dependent claims 40-46, 51, 53-56, 58-61, 70, and 72.

Claim 75-77, 79, 85, 87 and 88

Independent claims 75, 85, and 87 have been separately argued (Br. 21). Claim 75 recites a system having an apparatus for transmitting characteristic data of the marked tiles for further processing of the image raster data without transmitting raster image data of the marked tile. Claims 85 and 87 recite a computer program product having a medium with a stored computer program causing the computer to implement the above transmitting step. As these claims have limitations commensurate in scope with claim 39, we are persuaded by Appellant's argument for the reasons indicated above with regard to claim 39.

For the foregoing reasons, Appellant has shown error in the Examiner's obviousness rejection of claims 75, 85, and 87 and dependent claims 76, 77, 79, and 88.

Claims 80-83 and 86

Independent claim 80 recites a method for compressing and transmitting image raster data including transmitting characteristic data of the marked area for printing without transmitting the raster image data of the at least one area that contains only dither cells. Claim 86 recites a computer product with a computer program that implements the above transmitting step. As these claims are commensurate in scope with claim 39, we are persuaded by Appellant's argument for the reasons indicated above with regard to claim 39.

For the foregoing reasons, Appellant has shown error in the Examiner's obviousness rejection of claims 80 and 86 and dependent claims 81-83.

Claims 47-50, 52, 57, 62-69, 71, 73, 74, 78, and 84

Likewise, as the following claims depend directly or indirectly from the above discussed claims, we will not sustain the Examiner's rejections under 35 U.S.C. § 103(a) of (1) claims 47, 48, and 50 over Clouthier, Spaulding, Knox, and Hiratsuka; (2) claim 49 over Clouthier, Spaulding, Knox, Hiratsuka, and Wong; (3) claims 52, 57, 62, 71, and 78 over Clouthier, Spaulding, Knox, and Venkateswar; (4) claims 63, 65, and 69 over Clouthier, Spaulding, Knox, and Endoh; (5) claims 64 and 66 over Clouthier, Spaulding, Knox, Endoh, and Brindle; (6) claims 67 and 68 over Clouthier, Spaulding, Knox, and Züfle; (7) claims 73 and 74 over Clouthier, Spaulding, Knox, Venkateswar, and AAPA, and (8) claim 84 over Clouthier, Spaulding, Knox, and Official Notice.

OBVIOUSNESS REJECTION OVER CLOUTHIER AND SPAULDING

Regarding representative independent claim 89,⁴ the Examiner finds the combination of Clouthier and Spaulding teaches all the limitations, including transmitting characteristic data of the marked area for further processing of the image raster data, the characteristic data containing position and gray scale value information (Ans. 24 and 25). Appellant refers to the discussions of Clouthier and Spaulding made with respect to section (a) of the Brief or those made with respect to independent claims 39, 75, 80, 85, and 87 (Br. 27).

The scope of claim 89 varies from independent claims 39, 75, 80, 85, and 87. Independent claim 89 recites a computer program element stored on a computer readable medium having the command of “transmitting characteristic data of the marked area *for further processing* of the image raster data, said characteristic data contain information about a position of the respective tile and the respective gray scale value” (emphasis added). Therefore, claim 89 does not exclude the transmission of the marked tiles’ raster data during printing while transmitting characteristic data without the image raster data during further processing.

ISSUE

Has Appellant shown the Examiner erred in finding that the combination of Clouthier and Spaulding teaches “transmitting characteristic data of the marked area for further processing of the image raster data, said characteristic data contain information about a position of the respective tile

⁴ Appellant groups claims 89-92 (Br. 27). Accordingly, we select independent claim 89 as representative. 37 C.F.R. § 41.37(c)(1)(vii).

and the respective gray scale value” in rejecting claim 89 under
35 U.S.C. § 103?

ANALYSIS

As discussed above with respect to claim 39, Clouthier discloses generating a data stream of image raster data from language elements of a graphics language (FF 2-3). Clouthier also discloses the data stream includes data segments or dither cells whose gray scale values are determined by model dither cells (FF 1 and 4-8). Clouthier further determines an area that contains only dither cells (FF 1 and 5) and identifies the model dither cell and gray scale value of the area and marks the areas (FF 1 and 6-8).

Moreover, as claim 89 only requires transmitting position and gray scale characteristic values for further processing, Clouthier discloses steps where the position and final bucket or gray scale value are transmitted for further processing at module 26 (FF 6-8). Clouthier discloses the above explained steps are stored on a computer readable media and executable on a computer or printer 12 (FF 10). Therefore, Clouthier teaches all the limitations of claim 89, and Spaulding is cumulative. Nonetheless, Spaulding provides alternative model dither cells or dither look up tables (LUTs) to compare the input color to model values (FF 11). Such a substitution of the dither LUTs for the quantization tables in Clouthier would predictably result in providing an alternative table to compare with the matrix output of Clouthier (FF 6-8) while requiring less computations and being more flexible (FF 12). *See KSR*, 127 S. Ct. at 1739-40.

For the foregoing reasons, Appellant has not shown error in the Examiner's obviousness rejection of independent claims 89-92 based on Clouthier and Spaulding.

CONCLUSIONS

(1) Appellant has not shown that the Examiner erred in finding Clouthier teaches the step of dividing image raster data into tiles and identifying the tiles that contain only dither cells in rejecting claim 39 under 35 U.S.C. § 103.

(2) Appellant has, however, shown that the Examiner erred in finding the combination of Clouthier, Spaulding, and Knox teaches transmitting the pages of image raster data by sending characteristic data of the marked tiles for printing without transmitting image raster data in rejecting claim 39 under 35 U.S.C. § 103.

(3) Appellant has not shown that the Examiner erred in finding that the combination of Clouthier and Spaulding teaches "transmitting characteristic data of the marked area for further processing of the image raster data, said characteristic data contain information about a position of the respective tile and the respective gray scale value" in rejecting claim 89 under 35 U.S.C. § 103.

ORDER

We affirm the Examiner's rejection of claims 89-92 and reverse the Examiner's rejection of claims 39-88.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

Appeal 2008-5854
Application 10/009,539

AFFIRMED-IN-PART

ELD

SCHIFF HARDIN, LLP
PATENT DEPARTMENT
6600 SEARS TOWER
CHICAGO, IL 60606-6473